



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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OFFICE OF
ECOSYSTEMS, TRIBAL AND
PUBLIC AFFAIRS

Final Memorandum

**CLEAN WATER ACT §401 SUBSTANTIVE WATER QUALITY REQUIREMENTS
FOR THE JORGENSEN FORGE EARLY ACTION AREA REMOVAL ACTION**

August 9, 2013

I. Introduction

This Clean Water Act §401 Substantive Water Quality Requirements Memorandum (401 Memo) documents the United States Environmental Protection Agency's (EPA) determination that the in-water activities associated with the CERCLA non-time critical removal action (NTCRA) at the Jorgensen Forge Early Action Area meets the substantive requirements of the Clean Water Act §401 (CWA § 401). A copy of this 401 Memo and any future amendments will be placed in the Site File. In addition, copies of this original and any future amendments shall be kept on the job site and made readily available for reference by EPA, the contractor, and any other appropriate federal, tribal, state, and local inspectors.

The Removal Action will address approximately 16,00 cubic yards (cy) over 2.06 acres of contaminated sediments. The activities covered in this evaluation of substantive compliance include the following: removal of contaminated marine sediment and shoreline bank material; discharge of the dredge return water in to the LDW; placement of sediment backfill and shoreline slope containment materials; in-water debris and pile removal; and pile driving. The remediation of the site will be conducted in accordance with EPA's selected cleanup alternative documented in the Action Memorandum for a NTCRA at the Jorgensen Forge Facility (Action Memo; EPA 2011) and detailed in the Final Removal Design Document/Basis of Design Report-Jorgensen Forge Early Action Area (Removal Design Document) Washington (Anchor QEA, 2013).

The EPA is responsible for review of this project to ensure compliance with the substantive requirements of the CWA §401. We have drawn heavily on the State of Washington Water Quality Standards (Chapter 173-201A WAC) in our evaluation, these standards being normally applicable and used by the State of Washington for CWA § 401 certification in the absence of a CERCLA action. The anti-degradation policy of the State of Washington, in addition to preservation of beneficial uses, is a factor in our analysis. While the State of Washington has no certification authority regarding this Removal Action, EPA has coordinated with the Washington State Department of Ecology, the designated water quality agency for the State of Washington.

This finding of compliance with CWA §401 is based on our review of the project final remedial design documents, including the Final Basis of Design Report (BODR, August 2013) which includes the Water Quality Monitoring Plan and Appendices (WQMP). The WQMP serves as the overall water quality monitoring plan for the project, though conditions of this 401 Memo shall supersede the WQMP when specifications conflict between the two documents. Should new or more specific information become available during planning and during implementation of the project, a revised/amended 401 Memo will be prepared by the EPA, if necessary.

II. Removal Action

Details of each project component are described in the referenced support documents. The following is a brief summary of the site and relevant actions.

Construction activities planned as part of the Removal Action at the Jorgensen Forge Early Action Area to which this 401 Memorandum applies include: installation of temporary pilings; dredging of contaminated sediment; discharge of dredge return water; debris and pile removal; submerged shoreline bank excavation, and in-water placement of backfill and shoreline slope containment materials.

Approximately 10-15 temporary pilings will be installed prior to construction. The purpose of these temporary pilings is to provide mooring structures for in-water equipment during the construction activities. The temporary pilings will be removed following completion of the construction activities.

The purpose of sediment dredging is to remove 16,000 cubic yards (cy) of surface and subsurface sediments containing elevated concentrations of total PCBs above the removal action level (RvAL) of 12 milligrams per kilogram of organic carbon (mg/kg-OC) normalized. The Removal Action is also intended to remove other known contaminants, primarily metals that exceed an acceptable amount of risk. See Table 1 for the complete list of Contaminants of Concern at this site. Based on characterization data collected in the removal action boundary (RAB), it was determined that the other COCs will be removed along with the PCBs. Therefore, PCBs are used as a surrogate for all of the relevant contaminants.

Dredging is anticipated to be completed using mechanical methods. Specifically, a “precision” excavator equipped with a Young’s bucket deployed from a floating platform. However, large debris has been identified in the RAB (e.g., trees, concrete blocks, intact and broken pilings, or molten debris piles) and is likely beyond the lifting capacity of this type of bucket. In such cases, a heavier bucket with digging capabilities or a conventional wire-supported clamshell dredge, grapple, or vibratory hammer may be necessary.

The Young’s bucket is a “closed” bucket, which prohibits captured water from exiting the bucket upon closure and retrieval through the water column. This type of bucket leads to the transfer of large volumes of water into the sediment haul barge. To reduce the disposal costs to the extent feasible, free water (fluids) within the haul barge will be pumped to a secondary in-

water floating platform containing a water treatment system. This dredge return water will be treated and discharged back into the LDW within the construction work area.

The dredged sediments and debris/pilings will be disposed at an EPA-approved Subtitle D landfill. Additional soil characterization is occurring under a separate removal action within the uplands of the site associated with installation of a sheetpile wall to the northwest of the RAB. That characterization may result in identifying additional PCBs within the northwest portion of the RAB. In the event that total PCB concentrations found during that characterization are greater than 50 mg/kg, that material will be disposed in an EPA-approved Subtitle C landfill.

The dredging depths vary from 1 to 11 feet of removal, with an overdredge tolerance of 2 feet. Dredging adjacent to the sheet pile and concrete panel walls will be offset by 5 feet to minimize potential impacts to the structural stability of the walls.

Following dredging, the removal areas will be backfilled with clean import material to bring the area generally back to its approximate original grade, with the exception of areas within and up to 10 feet outside of the navigation channel, which will not be backfilled fully to grade (e.g., maximum elevation of -15 feet MLLW) to accommodate future maintenance dredging needs by the U.S. Army Corps of Engineers (USACE) in the adjacent navigation channel.

Approximately 570 linear feet of shoreline bank will be excavated to remove impacted nearshore soils and sediments, followed by the placement of a target 4-foot slope containment layer amended with granulated activated carbon. The excavation will result in the required removal of approximately 5,400 cy of impacted soil/sediment, fill material, and debris. The proposed shoreline reconfiguration extends from the top of the existing bank at approximately 19 to 20 feet MLLW down to -8 feet MLLW elevation. While every effort will be made to perform these excavation and containment activities from the landside (“in the dry”) during low tides, some of the shoreline work at lower elevations is expected to occur during times when the area is inundated and is thus covered by this 401 Memo.

III. Conditions of Substantive Compliance

As documented in this 401 Memo, EPA finds that it has reasonable assurance that the discharges associated with the removal action at the Jorgensen Forge Early Action Area as proposed and conditioned will be in substantive compliance with the applicable provisions of Sections 301, 302, 303, 306, and 307 of the Clean Water Act, as amended and other appropriate requirements of Washington State Law. This finding of compliance with the substantive requirements of the CWA §401 Water Quality Certification is subject to the following terms and conditions:

A. General Conditions

1. Expiration and Amendment

- a. This 401 Memo shall become effective on the date it is signed and shall remain valid for one construction season, expiring February 15th 2014 unless specifically extended by EPA through amendment, in consultation with the Services. In-water construction activities, including: installation of temporary piles; dredging of contaminated sediment; discharge of dredge return water; debris and pile removal; submerged shoreline bank excavation, and in-water placement of backfill and shoreline slope containment materials will be prohibited between February 15th and August 1st of 2014 unless timing extensions are specifically coordinated and approved by the appropriate resource agencies.
- b. Prior to expiration, this 401 Memo may be amended if there are significant additions, changes, modifications, and revisions to the Removal Design Document, Removal Action Work Plan (RAWP), the DAR or the WQMP.
- c. The EPA contact person for amendments, modifications, approvals, or any other changes to this 401 Memo is Erika Hoffman (Hoffman.erika@epa.gov), Environmental Review & Sediment Management Unit, Washington Operations Office (360)753-9540. Surface mail correspondence should be addressed to WOO, 300 Desmond Drive SE, Suite 102, Lacey, Washington 98503.

2. Reporting

- a. The EPA must be notified as soon as possible and within 24 hours of any water quality criteria exceedance or failure to comply with conditions of this 401 Memo. Reporting frequencies are detailed below. Typically, the EPA Remedial Project Manager (RPM) will be notified first and the RPM will then immediately notify the EPA Water Quality Specialist (WQS); however, the reverse may occur.

EPA Remedial Project Manager (RPM): Rebecca Chu (206) 553-1774;
chu.rebecca@epa.gov

EPA Water Quality Specialist (WQS): Erika Hoffman, (360)753-9540;
hoffman.erika@epa.gov
- b. Pre-project: EPA's RPM shall be notified at least 2 weeks prior to the commencement of removal activities.
- c. Daily reporting: Any water quality exceedances will be reported verbally or by e-mail to the EPA Remedial Project Manager on a daily basis.
- d. Weekly reporting: Results from each week's Water Quality Monitoring Forms will be compiled into a summary table and provided electronically to EPA with the Weekly

Progress Report. The exception to weekly reporting is the exceedance of a 401 Memo condition, which must follow the reporting sequence in the WQMP.

- e. Final project report: Once all construction is complete, results for the entire construction period will be compiled and reported to EPA along with supporting documentation in the Water Quality Monitoring Report as part of the Removal Action Completion Report. At a minimum, the report must include, but not be limited to, the following information:
 - i. A description of field sampling activities and a plan view of monitoring locations relative to the location of removal actions;
 - ii. Any deviations from the 401 Memo and reasons for the deviations;
 - iii. Description of changes or contingency BMP's implemented to avoid or address water quality impacts;
 - iv. A summary of field observations, including sampling times, weather conditions, water conditions, silt plumes, distressed/dying fish, and any relevant anecdotal or unusual observations;
 - v. Narrative and tabular text presenting results of water quality monitoring related to each operation;
 - vi. Discussion of water quality exceedances and any additional monitoring that may have resulted including rationale for selection/location of additional stations and/or discretionary samples;
 - vii. Data quality review results based on calibration and precision/accuracy information, including any data qualifiers and reasons for those qualifiers ;
 - viii. An appendix containing all completed water quality monitoring sample forms;
 - ix. An appendix containing all calibration information ;
 - x. A list of all of the best management practices (BMPs) related to water quality that were employed during the project implementation, when and why those were used, and an assessment of the effectiveness of those BMPs.

3. Incorporation of Other Documents by Reference:

The Final BODR (August 2013), WQMP (August 2013) and CQAP (August 2013) discuss potential concerns associated with each segment of construction, potential remedies and contingencies, best management practices, as well as inspection and monitoring associated with each element of this Removal Action. A memorandum, entitled "Summary of Potential Use of Chemical Flocculants in Dredge Return Water Treatment System – Jorgensen Forge Early Action Area" (Anchor QEA; July 2, 2013) discusses the potential use of chemical flocculants to support settling in the barge water treatment system. These are incorporated by reference here.

The Respondent will submit a RAWP and action-specific plans (e.g., Dredging Plan) that will provide further details and identify additional BMPs to EPA for review and comment. This plan should be consistent with and implemented in accordance with the terms and conditions of this 401 Memo. Additions, changes, modifications, and revisions to the WQMP or the RAWP by the Respondent or any consultants or contractors selected to do

the work on its behalf, shall require prior notification to and approval by EPA. If significant, the change will be documented and if necessary, an amended 401 Memo will be prepared by the EPA Water Quality Specialist.

4. Fish Timing Window

In order to minimize potential chemical and physical impacts from suspended sediments to out-migrating juvenile salmonids utilizing the nearshore environment for migration and feeding, project in-water construction activities will be prohibited between February 15, 2013 and August 1st, 2014 for this project specifically.

B. Water Quality and Water Quality Monitoring

1. Compliance Standards

The State of Washington Marine Acute and Chronic Water Quality Criteria for the protection of aquatic life, found within the Water Quality Standards (WQS), shall apply for all dredging, dredge return water discharge, and any other in-water activities (e.g., any shoreline excavation and debris removal not performed “in the dry” at low tide) (WAC Chapter 173-201A-240). Conventional parameters will comply with the water quality performance criteria for the “excellent quality” marine waters of the Duwamish River (WAC 173-201A-210) at the 150-ft point of compliance. All other applicable water quality criteria shall be met at the applicable point of compliance (as defined in Section 7 of this 401 Memo).

2. Dissolved Oxygen

At the 150-foot point of compliance, dissolved oxygen (DO) shall exceed 6.0 mg/L. If background DO is lower than this criterion due to natural conditions, as defined in WAC 173-201A-020¹, then the background condition minus 0.2 mg/L will replace the criterion (only for that period that background DO is lower). This standard is waived within the 150-foot point of compliance but at no time should dissolved oxygen drop below 3.5 mg/L within the 150-foot point of compliance. Should this occur, all in-water activities should cease immediately and EPA shall be notified. Work shall not recommence until dissolved oxygen levels have returned to ambient levels and approval has been given by EPA.

3. Turbidity

At the 150-foot point of compliance, turbidity shall not exceed 5 NTU over background turbidity when the background turbidity is 50 NTU or less, or have more than a 10 percent increase in turbidity when the background turbidity is more than 50 NTU

¹ “Natural Conditions” or “natural background levels” means surface water quality that was present before any human-caused pollution. When estimating natural conditions in the headwaters of a disturbed watershed it may be necessary to use the less disturbed conditions of a neighboring or similar watershed as a reference condition. (See also WAC 173-201A-260(1)).

4. Temperature

If the receiving water temperature is greater than 16°C (or within 0.3°C of 16°C) due to natural conditions, then no incremental increase of more than 0.3°C (over a 7-day average of daily maximum temperatures) is allowed at the 150-foot point of compliance.

If the receiving water temperature is less than 16°C (or more than 0.3°C below 16°C – i.e., less than 15.7°C), then incremental temperature increases must not, at any time, exceed a temperature defined as $12/(T-2)$ as measured at the 150-foot compliance zone boundary, where “T” is the highest ambient background in the vicinity (°C).

5. pH

The pH at the 150-foot compliance zone boundary must be within the range of 7.0 to 8.5 with a human-caused variation within the above range of less than 0.5 units.

6. Contaminants of Concern

The Jorgensen Removal Action COCs for sediments are listed in Table 1. At the designated point of compliance (see Section 7 below), the following acute and chronic Water Quality Criteria will apply:

Table 1: Applicable Marine Water Quality Criteria

Analyte	Marine Water Quality Criteria ^{ab} (µg/L)	
	Acute	Chronic
PCBs	10 ^c	0.03 ^c
Cadmium	40 ^d	8.8 ^e
Chromium	1100 ^d	50 ^e
Copper	4.8 ^d	3.1 ^e
Lead	210 ^d	8.1 ^e
Mercury	1.8 ^d	0.025 ^e
Silver	1.9 ^f	---
Zinc	90 ^d	81 ^e

^a Criteria listed are the lowest of 1) US EPA’s National Recommended Water Quality Criteria: Aquatic Life Criteria or 2) Water Quality Standards for Surface Waters of the State of Washington (WAC Chapter 173-201A-240).

^b All water quality criteria for trace metals are expressed in terms of the dissolved fraction.

^c A 24-hr average not to be exceeded.

^d A 1-hour average concentration not to be exceeded more than once every three years on the average.

^e A 4-day average concentration not to be exceeded more than once every three years on the average.

^f An instantaneous concentration not to be exceeded at any time.

If DO, turbidity or the acute or chronic water quality criteria for total PCBs or trace metals is exceeded at the applicable point of compliance, the steps outlined in Section 6.2 of the WQMP must be followed.

7. Points of Compliance

Per WAC 173-201A this memo establishes the following Points of Compliance for this project (Table 2).

Table 2: Applicable Points of Compliance

Activity	Standards	Point of Compliance
In-water dredging	Acute ^a and Conventional ^b parameters	150-ft radius from dredging location
In-water dredging	Chronic ^a parameters	300-ft radius from dredging location
Dredge return water discharge ^c	Acute and Conventional parameters	150-ft radius from dewatering location
Dredge return water discharge ^c	Chronic parameters	300-ft radius from dewatering location
Other in-water construction (i.e., pile/debris removal, submerged shoreline excavation)	Acute and Conventional parameters	150-ft radius from construction work area
Other in-water construction (i.e., pile/debris removal, submerged shoreline excavation)	Chronic parameters	300-ft radius from construction work area
In-water backfill placement	Conventional parameters	150-ft from placement location

^a Acute and chronic substances criteria.

^b Conventional include turbidity and dissolved oxygen and temperature and pH.

^c Separate monitoring of dredge return water discharge is only required if return water discharge and dredging activities are more than 150-ft apart.

8. Water Quality Monitoring

EPA has approved the Removal Design, which includes the Water Quality Monitoring Plan for this project (Appendix E Water Quality Monitoring Plan, Basis of Design Report, Jorgensen Early Action Area (Anchor QEA, August 2013) and this document is incorporated by reference as condition of this 401 Memo. Additions, changes, modifications, and revisions to the plan by the contractor selected to do the work shall require prior notification to and approval by EPA. Salient elements of the required monitoring are summarized below.

Timing, frequency, and type of monitoring are keyed to the particular in-water activity as outlined in the Water Quality Monitoring Schedule (Table 2) in the WQMP. The schedule is divided into three tiers for all in-water work. Tier 1 “intensive” monitoring will be

performed during the first 4 days of in-water removal work, during removal activities performed within 3 areas specifically designated as having “relatively elevated total PCB concentrations”, and in response to exceedances of turbidity criteria. Tier II “routine monitoring” will occur at all other time during in-water removal work. Tier III “limited monitoring” will occur during in-water backfill placement.

The timing of monitoring are intended to be representative of conditions during a given work day (limited to daylight hours) and, to the extent practicable, to capture potential worst-case conditions for suspended sediments. During active dredging, it is expected that worst-case conditions will occur approximately 1-2 hours after a tide reversal. This is because a suspended sediment plume moving in one direction prior to the reversal will be superimposed on the plume being generated by ongoing dredging. During the discharge of dredge return water, worst-case effluent conditions will depend on the way dredging is proceeding, how well the return water treatment system is operating, and how much water is mixed with sediment during dredging. The person directing field sampling must use discretion when determining timing of sampling on any given day.

In-water activities automatically requiring water quality monitoring are:

- In-water constructions (including dredging, debris removal, pile removal)
- Dredge return water discharge (can be covered by monitoring for dredging as long as activities are within 150-ft of each other)
- Submerged Shoreline Bank Excavation
- Backfill placement

Five types of water quality sampling stations are defined as follows:

- One ambient station located outside the influence of Removal Action activities.
- At the discretion of EMJ, potential monitoring at one early warning station located 75-feet upriver or downriver (depending on tide direction) from the construction work area.
- 150-foot compliance stations located upriver and downriver from the construction work area.
- 300-foot compliance stations located upriver and downriver from the construction work area.
- Discretionary stations may be necessary if the compliance station indicates water quality exceedances are occurring. The rationale for taking discretionary stations should be clearly indicated in field notes. Discretionary stations can be used to track and document the nature and extent of any plume associated with exceedances as well as to identify the source of a plume or exceedance.

Water quality measurements/samples will be taken at two sampling depths: near-surface (approximately 3 ft below the water surface) and near-bottom (approximately 4 ft above mudline). If the water depth is less than 10 feet at a given monitoring location, monitoring will occur at the mid-point of the water column (i.e., a single depth).

9. Water Quality Exceedance

In the event the water quality monitoring field staff detect a water quality exceedance at a 150-ft compliance monitoring station (or 300-ft station) or if water grab sample chemistry results detect an exceedance of the acute or chronic criteria for a COC, the Water Quality Response Mechanisms sequence outlined in Figure 5 (attached) of the WQMP must be followed (summarized below).

- Alert the Construction Quality Assurance Officer (CQAO) and EPA following receipt of confirmed field results or lab results as soon as possible and within 24 hours.
- For field results, compare compliance boundary data to that from the upstream ambient station to evaluate whether concentrations may be elevated as a result of the Removal Action, or may reflect area-wide water quality conditions. Removal Action operations may continue during this review.
- For field results, if exceedance is attributed to the Removal Action dredging operations, water samples will be collected and analyzed for chemical parameters at 150 and 300 feet from the construction work area at the depth of exceedance. Water samples from all other depths will also be collected and archived pending results of initial chemical analysis. Conventional parameters will be re-collected every 2 hours until the exceedance is resolved.
- For lab results, initiate analysis of appropriate archived sample(s) to evaluate instantaneous, 1-hr averaged, 24-hr averaged or 4-day averaged concentrations relative to compliance.
- Removal Action operations may continue, may be altered, or may be halted pending the results of the additional testing. After receipt of the follow-up testing results, the contractor will assemble a list of recommendations for addressing any confirmed exceedance(s).
- The CQAO and EPA will be notified of follow-up testing results. If concentrations in the follow-up monitoring indicate continuing exceedances of water quality criteria caused by the Removal Action, the QAO, the Resident Engineer and EPA will confer concerning additional sampling, implementation of operational controls, and/or re-evaluation of the compliance boundary for water quality chemical criteria.

10. Effects on Fish

If during in-water activities, distressed and/or dying fish are observed in the construction vicinity, EPA must be immediately notified of the condition. The operator shall collect fish specimens and water samples in the affected area and, within the first hour of such conditions, have the water samples analyzed for dissolved oxygen and total sulfides. For distressed or dying fish the following, at a minimum, will be noted:

- Condition of fish (dead, dying, decaying, erratic or unusual behavior)
- Number, species, and size of fish in each condition
- Location of fish relative to operations
- Presence of any apparently healthy fish in the area at the same time
- Whether the species is a listed species

Additional water quality measurements may need to be taken at the discretion of the CQAO and EPA, and are intended to define the area of impact and assess the situation to allow informed decisions. The cause of any water quality problem will be assessed and appropriate measures (e.g., change production rates, modify work schedule, perform work on a slack tide, etc.) will be taken to correct an identified problem.

11. Silt Plume

If routine water quality monitoring is not being performed during in-water activities and a silt plume is observed in the vicinity of construction operations, EPA must be immediately notified and decisions regarding additional water quality monitoring coordinated. Any additional water quality measurements will be taken at the discretion of the CQAO and EPA, and are intended to define the area of impact and assess the situation to allow informed decisions. The cause of any water quality problem will be assessed and appropriate measures (e.g., change production rates, modify work schedule, perform work on a slack tide, etc.) will be taken to correct an identified problem if project operations are determined to be the source.

C. Dredging, Debris/Pile Removal and Disposal

1. All dredging is to be done using a precision excavator dredge with an enclosed environmental bucket, or conventional clamshell where there is large debris or pilings that cannot be removed with the environmental bucket.
2. Shoreline bank excavation and containment activities will be performed from the landside during low tides to the extent practicable to accomplish this work “in the dry” using conventional land-based earthmoving equipment (e.g. excavators, front-end loaders, and dump trucks).
3. Dredged/excavated materials generated for the project may be segregated for beneficial reuse and alternative daily cover at permitted landfills, and disposal at permitted solid waste landfills in accordance with State and Federal solid and hazardous waste regulations.
4. Dredged material shall not be stockpiled on a temporary or permanent basis below the ordinary high water line.

5. Reasonable precautions and controls must be used to minimize the disturbance or siltation of adjacent waters and prevent incidental and accidental discharges of petroleum products or other deleterious or toxic materials from entering the water as a result of any in-water activities. Materials such as sorbent pads and booms must be available on-site and must be used to contain and clean up petroleum product spilled as a result of the in-water activities. If significant oil sheen is observed immediate corrective actions must be taken to modify the operation to prevent further degradation, or the activity must cease. EPA must be notified of the situation.

D. Dredge Return Water Handling and Discharge

1. Water associated with dredging will be pumped from sediment haul barges to an on-barge treatment system to remove excess sediment and associated contaminants prior to discharging back to the LDW (as described in the BODR – August 2013).
2. Discharge water must comply with turbidity and COC criteria as measured at the 150-ft and 300-ft points of compliance (WQMP, August 2013).
3. If a chemical flocculant is used to treat dredge return water (as discussed in Anchor's Memo "Summary of Potential Use of Chemical Flocculants in Dredge Return Water Treatment System – Jorgensen Forge Early Action Area - July 2, 2013"), the following conditions will apply:
 - a. Flocculant used must follow Ecology's Approved Construction Treatment Technologies as authorized by the General Use Level Designation (GULD). (<http://www.ecy.wa.gov/programs/wq/stormwater/newtech/construction.html>)
 - b. The use of flocculants shall be in accordance with Ecology's requirements for operator training and certification (<http://www.ecy.wa.gov/programs/wq/stormwater/newtech/CESFtraininggl.html>).
 - c. The contractor must follow GULD requirements for sampling to verify that flocculant residual concentrations in return water are below 0.2 ppm.

E. Placement of Backfill and Shoreline Bank Reconfiguration

1. Clean, backfill material must be used, which is free from fines and suspendable material (to the extent practicable) and free from contamination by petroleum products or toxic substances in toxic amounts. Prior to placement of the backfill material, the EPA Project Manager must be provided with information regarding the location/source of the material and detailed specifications of this material, including chemistry and grain size information, and approve its suitability as a clean backfill material.
2. Water quality protection measures that will be applied to the shoreline bank reconfiguration include the following:

- a. Shoreline excavation and placement of slope containment materials are anticipated to be performed “in the dry” to the extent possible given the LDW tidal elevations during the construction period.
- b. Construction quality control procedures will be used to verify the limits and depths of excavation, and the limits and thickness of slope containment materials.
- c. Surface booms, oil-absorbent pads, and similar materials will be made available in case any sheen is observed on the surface of the water during construction.
- d. Proper erosion measures will be implemented to contain the excavated materials and to prevent any materials from entering the LDW during handling, storage, and transport to the off-site disposal facility.

F. Pre- and Post-dredge Perimeter Sediment Sampling

In order to determine what, if any, effects removal and construction activities have on adjacent (perimeter) sediments, a series of grab samples will be collected both before the commencement of activities and after the final cover has been placed. Grab samples (0-10 cm in depth) will be collected at 3 locations located approximately 20 feet to the west and 9 locations at varying distances south (upstream) of the removal boundaries of the Jorgensen EAA. The Boeing Plant 2 Duwamish Sediment Other Area (DSOA) cleanup action is located directly downstream (north) of Jorgensen. Boeing is implementing a separate perimeter monitoring plan to address potential releases from the DSOA removal activity as described in the Pre- and Post-Construction Perimeter Sediment Monitoring Plan (AMEC 2012). Therefore, no perimeter monitoring downstream of Jorgensen RAB is required.

These samples will be analyzed for Total PCB (Aroclors), metals (i.e., arsenic, cadmium, chromium, copper, lead, mercury, silver, and zinc), total organic carbon, total solids, and grain size. The exact locations are documented in the Figure 3 of the CQAPP (dated August 2013). Any changes to this sampling/testing must be approved by EPA.

G. Emergency/Contingency Measures:

1. The Respondent or its representative will develop a spill prevention and containment plan (Temporary Facilities Controls and Environmental Pollution Control Plan) and include this in the RAWP for this project. The Respondent or its representative shall have spill cleanup materials and an emergency call list available on site.
2. Any work that is out of compliance with the provisions of CWA § 401 Standards Memorandum, or conditions causing distressed or dying fish, or any discharge of oil, fuel, or chemicals into state waters, or onto land with a potential for entry into state waters, is prohibited. If these occur, the Applicant or operator shall immediately take the following actions:
 - a. Cease operations that are causing the compliance problem.

- b. Assess the cause of the water quality problem and take appropriate measures to correct the problem and/or prevent further environmental damage.
 - c. In the event of finding distressed or dying fish, the applicant shall collect fish specimens and water samples in the affected area within the first hour of the event. These samples shall be held in refrigeration or on ice until the applicant is instructed by EPA on what to do with them. EPA may require analyses of these samples before allowing the work to resume.
 - d. In the event of a discharge of oil, fuel, or chemicals into state waters, or onto land with a potential for entry into state waters, containment and cleanup efforts shall begin immediately and be completed as soon as possible, taking precedence over normal work. Cleanup shall include proper disposal of any spilled material and used cleanup materials.
 - e. Immediately notify EPA's RPM Rebecca Chu (206) 553-1774; chu.rebecca@epa.gov.
 - f. Submit a detailed written report to EPA within five (5) days that describes the nature of the event, corrective action taken and/or planned, steps to be taken to prevent a recurrence, results of any samples taken, and any other pertinent information.
3. Fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc., shall be checked regularly for drips or leaks, and shall be maintained and stored properly to prevent spills.

PREPARED AND APPROVED BY:



8/9/13
Date

Erika Hoffman
Environmental Review & Sediment Management Unit

cc:
Rebecca Chu (EPA Remedial Project Manager)
Aaron Lambert (EPA Remedial Project Manager)
Maureen Sanchez (WA Dept. of Ecology)